Comprehensive Long-Term Environmental Action Navy (CLEAN II)

Contract # N62474-94-D-7609 · Contract Task Order 005

Action Memorandum Parcel E Landfill Fire Emergency Removal Action Hunters Point Shipyard San Francisco, California

November 7, 2000

Department of the Navy • Southwest Division

ACTION MEMORANDUM
PARCEL E LANDFILL FIRE
EMERGENCY REMOVAL ACTION
HUNTERS POINT SHIPYARD
SAN FRANCISCO, CALIFORNIA

November 7, 2000

Issued by

DEPARTMENT OF THE NAVY
Southwest Division
Naval Facilities Engineering Command
San Diego, California

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ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or relevant and appropriate requirement
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
CCR	*California Code of Regulations*
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
COC	Contaminant of concern
DON	Department of the Navy
DTSC	California Department of Toxic Substances Control
ELCR	Excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
FS	Feasibility study
HHRA	Human health risk assessment
HPS	Hunters Point Shipyard
IR	Installation Restoration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PA	Preliminary assessment
PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PRC	PRC Environmental Management, Inc.
PRP	Potentially responsible party
RI	Remedial investigation
RWQCB	California Regional Water Quality Control Board, San Francisco Bay Region
SARA	Superfund Amendments and Reauthorization Act of 1986
SI	Site inspection
TtEMI	Tetra Tech EM Inc.
U.S.C.	*United States Code*
VOC	Volatile organic compound

ACTION MEMORANDUM

Department of Navy
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132

Subject:	**Action Memorandum/Parcel E Landfill Fire Emergency Removal Action, Hunters Point Shipyard, San Francisco, California**
Site Status:	National Priorities List
Category of Removal:	Emergency Response Action
CERCLIS ID:	CA1170090087

1.0 PURPOSE

The purpose of this ACTION MEMORANDUM/PARCEL E LANDFILL FIRE EMERGENCY REMOVAL ACTION (Hereinafter "Action Memorandum") is to document, for the Administrative Record, the Department of the Navy's (DON) decision to undertake emergency capping in response to the fire that broke out on August 16, 2000, on the landfill at Parcel E of Hunters Point Shipyard (HPS) (see Figure 1). The landfill site contains metals, polynuclear aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), sandblast waste, asbestos-containing material, paint sludge, solvents, and waste oils. The Department of Defense has the authority to undertake Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions, including removal actions, under 42 *United States Code* (U.S.C.) §9604, 10 U.S.C. §2705, and Federal Executive Order 12580. Further, this emergency removal action is consistent, to the maximum extent possible, with Title 23, §2541 *California Code of Regulations* (CCR).

The proposed emergency capping involves placing approximately 2 feet of base rock, soil, a geosynthetic clay liner, a high-density polyethylene liner, and a geocomposite drainage layer, over a 16-acre portion of the landfill site where the debris is most concentrated and where the subsurface fire broke out (see Figure 2). This cap is being installed specifically to prevent air intrusion into the site and to smother any remaining subsurface smoldering areas. This proposed action will substantially eliminate the possibility of future final action required for extinguishing the landfill fire. Completion of this capping will be documented in a removal action closeout report.

No nationally significant or precedent-setting issues exist for these sites.

2.0 SITE CONDITIONS AND BACKGROUND

2.1 SITE DESCRIPTION

2.1.1 Site Evaluation

HPS operated as a ship repair and maintenance facility from 1958 until 1974; the Navy deactivated HPS in 1974. From 1976 to 1986, the Navy leased HPS to a private ship repair company. In 1986, the private repair company ceased operations at HPS, and the Navy resumed occupancy of HPS.

The Shipyard is divided into six parcels (A through F); this Action Memorandum deals specifically with Parcel E and the landfill located in this portion of HPS. Parcel E has undergone preliminary assessments (PA), site inspections (SI), remedial investigations (RI), and feasibility studies (FS). During these investigations, the landfill within Parcel E was identified as containing hazardous substances at levels that potentially pose an unacceptable risk to human health. Various sources have contributed to the contamination of the Parcel E landfill, although the majority of the waste is from industrial ship repair and maintenance activities conducted at HPS from 1958 through 1974. The RI reports for Parcel E (PRC Environmental Management, Inc. [PRC] 1997b; Tetra Tech EM Inc. [TtEMI] 1998) provide detail about suspected pollutant sources at the landfill. A detailed human health risk assessment (HHRA) is documented in Appendix N of the RI report.

2.1.2 Physical Location

HPS is located in the City and County of San Francisco, California, and is situated on a long promontory located in the southeastern part of San Francisco, extending eastward into San Francisco Bay. HPS consists of 936 acres, 493 of which are on land. Parcel E is located within the land portion of the HPS facility.

The HPS climate is characterized by partly cloudy, cool summers with little precipitation and mostly clear, mild winters with moderate precipitation. The average annual precipitation in the area is approximately 20 inches and precipitation occurs mostly in the winter. Residences, public areas, and facilities are located within a 1-mile radius of HPS. Vulnerable or sensitive populations, habitats, and natural resources exist at Parcel E. The San Francisco Bay is adjacent to HPS. The landfill itself, however, is an industrial area, and no residences are located on that section of Parcel E.

2.1.3 Site Characteristics

The landfill site consists of about 46 acres. The filling of the area with artificial fill began in the 1940s after which it was predominantly filled with shipyard wastes as described above. The average depth to the top of the concentrated debris zone is approximately 7.5 feet, and the average depth to the bottom of the debris zone is 22.6 feet.

2.1.4 Release or Threatened Release

The mechanism for the release of contaminants of concern to the area surrounding the landfill at Parcel E is assumed to be discharges to the air resulting from the subsurface smoldering of landfill materials.

The potential routes of exposure to receptors include dermal contact, ingestion, and inhalation of soils particulates or smoke containing contaminants of concern.

2.1.5 National Priorities List Status

The HPS property was placed on the National Priorities List (NPL) in 1989 as a Superfund site, pursuant to CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA). As cleanup goals are met, each of the six parcels will be delisted. Parcel A was delisted in February 1999.

2.1.6 Maps, Pictures, and Other Graphic Representations

Figure 1 presents the approximate cap limit for the emergency removal action at HPS. Figure 2 illustrates a typical cap cross section.

2.2 OTHER ACTIONS TO DATE

2.2.1 Previous Actions

Response actions related to the fire include spraying approximately 600,000 gallons of water on the landfill in an attempt to extinguish the fire from August 16 through August 28, 2000. Previous removal activities are discussed in Section 2.5 of the FS reports for Parcel E (PRC 1997a; TtEMI 1998).

2.2.2 Current Actions

Response actions currently underway at Parcel E include air, soil, and groundwater monitoring and installing the landfill cap.

2.3 ROLE OF STATE AND LOCAL AUTHORITIES

2.3.1 State and Local Actions to Date

No state or local actions have been taken with regard to this issue.

2.3.2 Potential for Continued State and Local Response

The U.S. Environmental Protection Agency (EPA), Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), have provided technical advice and oversight during the PA/SI and RI/FS phases of the Installation Restoration (IR) Program. EPA, DTSC, and RWQCB are members of the Base Realignment and Closure (BRAC) Cleanup Team (BCT). DTSC and RWQCB have provided technical advice and oversight and assistance with this Emergency Removal Action and will continue to do so throughout the IR process. It is expected that DON BRAC funds will continue to be the exclusive source of funding for this program.

3.0 THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

In accordance with the 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the following threat must be considered in determining the appropriateness of a removal action (40 *Code of Federal Regulations* (CFR) §300.415[b][2][iv]):

- Threat of fire or explosion

The case-specific threat that must be considered in determining the appropriateness of a removal action is:

- Air contamination resulting from the burning of landfill contents from fire and explosion

3.1 THREATS TO PUBLIC HEALTH OR WELFARE

The threat of air pollution resulting from fire or explosion applies to conditions at the Parcel E landfill due to the contents of the landfill. Contaminants of concern (COC) identified in the landfill include metals, PAHs, and PCBs at concentrations that may result in an excess lifetime cancer risk (ELCR) of greater

than 1×10^{-6} or a hazard index of greater than 1. The HHRAs conducted at Parcel E are documented in Appendix N of the RI report for the respective parcels (PRC 1997b; TtEMI 1998). The contaminants mentioned above could potentially contribute to air pollution if burned.

Potential exposure pathways include ingestion, direct contact, and inhalation of soil particulates or smoke containing these contaminants.

Capping over the burn area and containing contaminated material within the landfill is required to mitigate potential threats to human health. Capping will minimize potential contaminated particulate escape routes and cut off the oxygen source. The recommended action described in this Action Memorandum will address these potential threats to human health.

3.2 THREATS TO THE ENVIRONMENT

Parcel E contains typical industrial sites with buildings and paved areas that are not suitable as habitat for terrestrial ecological receptors, as well as terrestrial habitats, aquatic environments, and transitional wetlands that are suitable for ecological receptors.

COCs detected at the Parcel E landfill include metals, PAHs, PCBs, and dioxins (potentially generated at the surface as a result of the fire). COCs for the HPS Parcel E are documented in the RI reports (PRC 1997b; TtEMI 1998). Contaminants could potentially be released to the air by fire or an explosion.

Potential exposure pathways for ecological receptors include ingestion, direct contact, and inhalation of soil particulates or smoke containing these contaminants.

Capping over the burn area and containing contaminated material within the landfill is required to mitigate potential threats to the environment; capping will minimize potential escape routes and cut off the oxygen source. The recommended action described in this Action Memorandum will address these potential threats to the environment.

4.0 ENDANGERMENT DETERMINATION

HHRAs conducted for Parcel E (PRC 1997; TtEMI 1998) and other information contained in the administrative record demonstrate that current conditions at the Parcel E landfill present potential threats to public health, welfare, or the environment. Table 1 lists administrative record documents that are relevant to this interim capping plan.

Actual or threatened releases of hazardous substances to the air from the Parcel E landfill, if not addressed by implementing the response action selected in this Action Memorandum, may endanger public health, welfare, or the environment. The contamination presents an imminent or substantial endangerment of the following: (1) human and ecological receptors' exposure to contaminants, (2) spread of contaminants by migration, and (3) fire.

5.0 PROPOSED ACTIONS CONSIDERED AND ESTIMATED COSTS

This section provides information regarding alternatives for emergency action, the proposed action, and estimated costs.

5.1 DESCRIPTION OF PROPOSED ACTION

The Navy proposed several alternatives to the landfill cap for Parcel E in response to the recent fire:

- Install a soil cap only
- Flood the site with water
- Excavate the smoldering areas, expose the waste, extinguish the fire, and remove the waste
- Install a multilayer cap

5.2 PROPOSED ACTION SELECTED

The following sections discuss the proposed action that was selected, as well as the alternatives.

5.2.1 Description of Proposed Action

The proposed action selected for the Parcel E emergency removal action is the multilayer cap, which consists of the following actions:

- Clear the surface of debris and vegetation to the extent of the known burn area
- Compact the existing surface area
- Place a foundation layer of base rock and compacted soil
- Place liners and compacted soil
- Place drainage controls

- Extend groundwater monitoring wells to at least 3 feet above ground surface
- Seed the cover area

Off-site transportation of debris will be carried out in compliance with CERCLA Section 121 (d) (3) and 40 CFR 300.440.

The proposed action that was selected fulfills the technology selection criteria of effectiveness, implementability, and cost. The proposed action:

- Has an estimated total cost of $6,000,000, which does not include additional operation and maintenance costs;
- Would provide protection of human health and the environment from air pollution, because it will suppress the fire, as well as cover that portion of the landfill, keeping contaminants underground;
- Provides an effective method to prevent the fire at the landfill from restarting, because it cuts off the oxygen supply from the surface to the subsurface;
- Provides short-term effectiveness, because emergency removal action goals would be achieved as soon as the cap is installed.

5.2.2 Discussion of Alternative Response Actions

This section discusses the alternative response actions mentioned in Section 5.1.

The "soil cap only" solution was initially proposed when it was believed that the fire was mainly a surface fire. However, the fire has been smoldering in the subsurface. As a result, the soil cap may not be a sufficient barrier in blocking air from seeping underground, therefore not completely extinguishing the fire. The recommended multilayer cap, on the other hand, minimizes the oxygen flow to the subsurface, increasing the chances of fire suppression.

As mentioned previously, flooding the site with water was already attempted. This was done when it was believed that the fire was on the surface. However, considering that smoldering continued in the subsurface, flooding is not an effective solution for these conditions. In addition, adding more water to the site and attempting to reach the lower levels could result in increased leaching of contaminations into the groundwater.

A comparative analysis of alternatives was performed at Parcel E and showed that excavation to expose the waste, fire suppression, and waste removal potentially provided the highest level of long-term

effectiveness. This proposed alternative also potentially provides short-term effectiveness, because emergency removal action goals would be achieved once the soil is removed. This alternative would provide protection of human health and the environment from chemical contaminants in the soil, since the material that caught on fire would be removed. However, because excavating the site would result in more oxygen flow to smoldering areas, the potential for additional burning and surface fires is increased, making this solution less effective. Additionally, this proposed alternative has an estimated total cost of more than $100,000,000, which is not cost effective and greatly exceeds the recommended action's total cost.

5.2.3 Contribution to Remedial Performance

The area of the landfill where a subsurface fire may exist will be capped. No further response action for the fire is anticipated to be required.

5.2.4 Applicable or Relevant and Appropriate Requirements

Section 300.415(j) of the NCP provides that removal actions must attain applicable or relevant and appropriate requirements (ARAR) to the extent practicable, considering the exigencies of the situation.

Section 300.5 of the NCP defines applicable requirements as cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site.

Section 300.5 of the NCP defines relevant and appropriate requirements as cleanup standards, standards of control and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site and are well-suited to the particular site.

Because CERCLA on-site response actions do not require permitting, only substantive requirements are considered as possible ARARs. Administrative requirements, such as approval of or consultation with administrative bodies, issuance of permits, documentation, reporting, recordkeeping, and enforcement, are not ARARs for CERCLA actions confined to the site. Only those State standards that are identified by a State in a timely manner and are more stringent than Federal requirements may be applicable or relevant and appropriate.

There are three types of ARARs. The first type includes "chemical-specific" requirements. These ARARs set limits on concentrations of specific hazardous substances, contaminants, and pollutants in the environment. Examples of this type of ARAR are ambient water quality criteria and drinking water standards. The second type of ARAR includes location-specific requirements that set restrictions on certain types of activities based on site characteristics. These include restrictions on activities in wetlands, flood plains, and historic sites. The third type of ARAR includes action-specific requirements. These are technology-based restrictions, which are triggered by the type of action under consideration. Examples of action-specific ARARs are Resource Conservation and Recovery Act regulations for waste treatment, storage, and disposal.

ARARs must be identified on a site-specific basis from information about specific chemicals at the site, specific features of the site location, and actions that are being considered as removal actions.

The ARARs identified for the Parcel E emergency capping plan are provided in Table 2.

5.2.5 Project Schedule

The Parcel E emergency capping plan began in September 2000 and is expected to be completed by November 2000.

5.3 ESTIMATED COSTS

The DON has made a present worth estimate of the emergency response action costs. The estimated costs include the direct and indirect capital costs of the proposed alternative. Postremoval site control costs are anticipated for this emergency removal action. The following items are considered to be capital costs:

Direct Capital Costs

Construction costs	$1,000,000
Equipment and material	$1,500,000
Transport and disposal	$3,000,000
Contingency allowances	$440,000

Indirect Capital Costs

Engineering and design expenses	$60,000

The estimated present worth total cost for the proposed action is $6,000,000, with an additional $50,000 per year over 2 years for maintenance costs (including erosion control, reseeding, and liner repair required due to potential settling).

6.0 EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If action is not taken, nearby populations and ecological receptors may be exposed to increased air pollution.

7.0 PUBLIC INVOLVEMENT

Because this is an emergency removal action, the administrative record file for this removal action shall be made available for public inspection no later than 60 days after initiation of on-site removal activity (in accordance with NCP 40 CFR §300.820[b][1]).

8.0 OUTSTANDING POLICY ISSUES

No outstanding policy issues exist for this emergency response action.

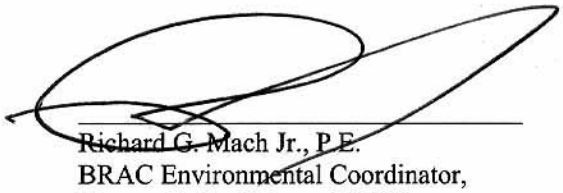
9.0 RECOMMENDATION

This Action Memorandum was developed in accordance with EPA and Navy guidance documents for emergency removal actions under CERCLA.

The proposed emergency removal action is recommended, because it fulfills the three removal action criteria of effectiveness, implementability, and cost, as described in Section 5.0. This action provides long- and short-term effectiveness and protection of human health and the environment from chemical contaminants in soil by covering the landfill. This proposed action does not have any technical or administrative implementability constraints. The estimated total cost is $6,000,000, which does not include additional operation and maintenance costs.

To date, DON has not acquired evidence identifying other potentially responsible parties (PRP) at this site. However, information acquired in the future, including but not limited to information acquired during the implementation of this emergency removal action, or future response actions at the site, could identify other PRPs.

This decision document represents the final selected action in response to the fire located in the Parcel E landfill at HPS in San Francisco, California. The document was developed in accordance with CERCLA, as amended by SARA, and it is consistent with the NCP. This decision is based on the administrative record for the site.



Richard G. Mach Jr., P.E.
BRAC Environmental Coordinator,
Hunters Point Shipyard (HPS)

7 NOV 00
[DATE]

REFERENCES

PRC Environmental Management, Inc. (PRC). 1997a. "Draft Final Parcel E Feasibility Study (FS) Report, HPS, San Francisco, California." January 24.

PRC. 1997b. "Draft Final Parcel E Remedial Investigation Report, HPS, San Francisco, California." March 13.

Tetra Tech EM Inc. 1998. "Draft Final Parcel E FS Report, HPS, San Francisco, California." January 15.

FIGURES

FIGURE 1 APPROXIMATE CAP LIMIT

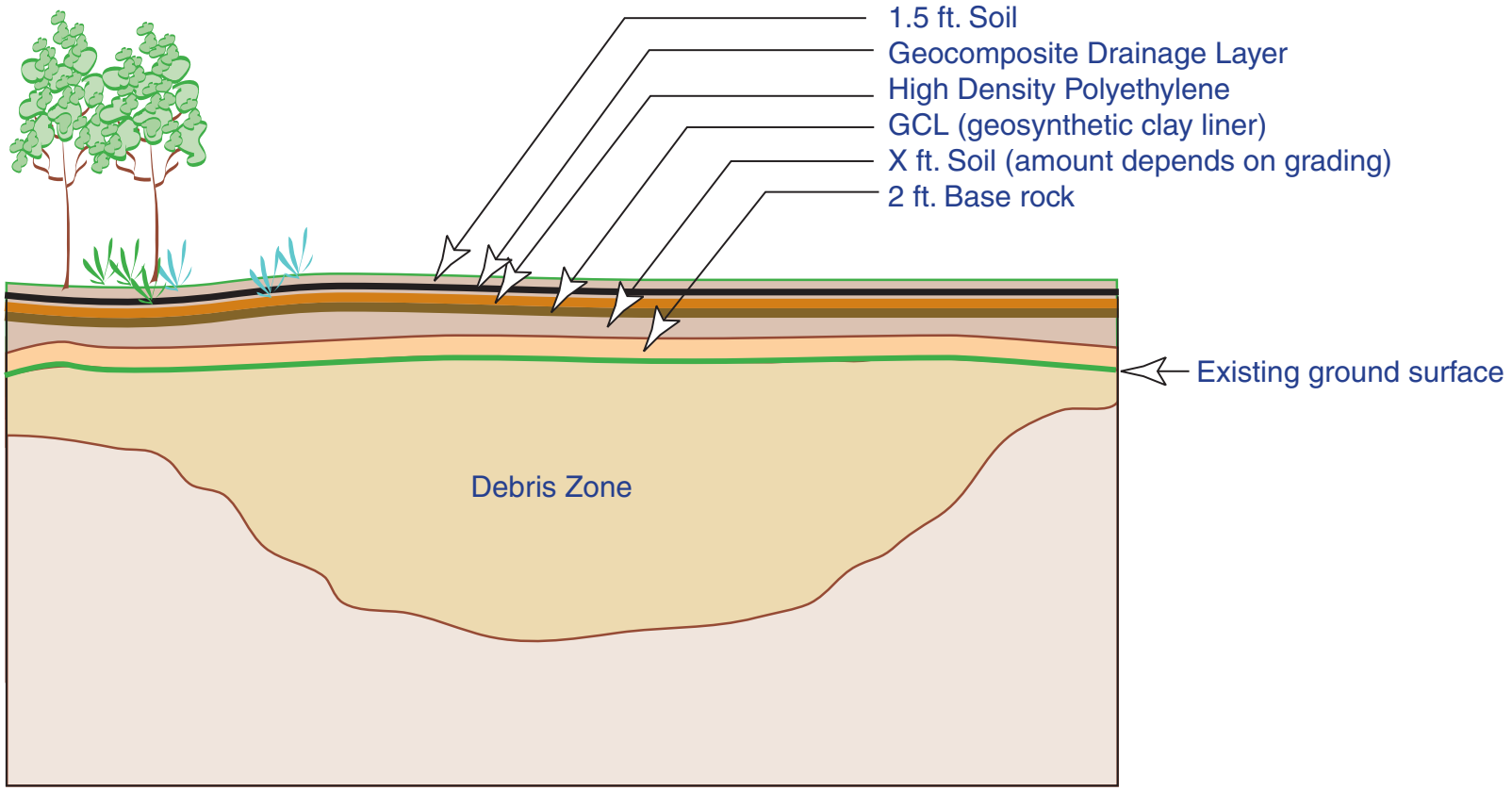


FIGURE 2 TYPICAL CAP CROSS-SECTION

TABLES

TABLE 1

ADMINISTRATIVE RECORD FILE INDEX - UPDATE (SORTED BY RECORD DATE/RECORD NUMBER)
HUNTER'S POINT SHIPYARD
DOCUMENTS ASSOCIATED WITH PARCEL E

UIC No./Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. No. Pages	Prc. Date Record Date CTO No. EPA Cat. No.	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00217/003027 RPT None 0000	11-18-1999 **4-15-1994** None 00.0	PRC	Final Site Assessment Report, Potentially Contaminated Sites, Parcels B, C, D, and E	Admin. Record	SA	Parcel B Parcel C Parcel D Parcel E	Pierce Leahy 45359675
N00217/002980 RPT None 0000	11-18-1999 **05-02-1994** None 00.0	PRC	Draft Final Report Parcel E Report, Volume I: Text, Tables, and Plates	Admin. Record	SI	Parcel E	Pierce Leahy 45359672
N00217/003645 RPT N62474-94-D-7609 0500	11-18-1999 **3-13-1997** 00011 00.0	PRC Sickles, James M. Navy Clark, Glenna, M.	Draft Final Report, Parcel E RI, Text, Volume I of XV	Admin. Record Walden	RI	Parcel E	Pierce Leahy 45359700
N00217/003646 RPT N62474-94-D-7609 0500	11-18-1999 **3-13-1997** 00011 00.0	PRC Sickles, James M. Navy Clark, Glenna, M.	Draft Final Report, Parcel E RI, Text, Volume II of XV	Admin. Record Walden	RI	Parcel E	Pierce Leahy 45359700

TABLE 1 (Continued)

ADMINISTRATIVE RECORD FILE INDEX - UPDATE (SORTED BY RECORD DATE/RECORD NUMBER)
HUNTER'S POINT SHIPYARD
DOCUMENTS ASSOCIATED WITH PARCEL E

UIC No./Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. No. Pages	Prc. Date Record Date CTO No. EPA Cat. No.	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00217/003647 RPT N62474-94D-7609 0500	11-18-1999 **3-13-1997** 00011 00.0	PRC Sickles, James M. Navy Clark, Glenna, M.	Draft Final Report, Parcel E RI, Text, Volume III of XV	Admin. Record Walden	RI	Parcel E	Pierce Leahy 45359700

This Administrative Record (AR) Index includes references to documents, which cite bibliography sources.
These bibliographic citations are considered to be part of this AR but may not be cited separately in the index.

TABLE 2

FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR PARCEL E EMERGENCY REMOVAL ACTION CAPPING PLAN

Requirement	Citation	ARAR Determination	Comments
Control of air emissions: fugitive particulate, VOC, and visible emission standards for excavation of soil and staging in piles (if necessary)	BAAQMD Regulations 6-301, 6-302, 6-305, 8-40-301, and 8-40-303	Relevant and appropriate	Fugitive particulate and visible emission standards are relevant and appropriate for excavation and construction activities. Regulations 8-40-301 and 8-40-303 contain requirements for uncontrolled aeration (of VOCs) and for stockpiling soil.
A small Wetland area at IR-01/21 will need to be avoided during capping activities.	Protection of Wetlands Executive Order No. 119900 and 40 CFR Section 6.320(a) and Appendix A COE NWP 38	Applicable	
The substantive capping and postclosure provision of the hazardous waste landfill regulations will be followed for containment of IR-01/21	CCR Title 22, Division 4.5, Chapter 14, Articles 1 through 7 and Article 14, Hazardous Waste Landfill Regulations	Relevant and appropriate	
IR-01/21 may need to be designated as CAMUs to allow efficient consolidation of contaminated soil from other Parcel E sites at IR-01/21	CCR Title, Division 4.5, Chapter 14, Article 15.5, Section 66264.552, CAMU Regulation	Relevant and appropriate	
Requires the characterization of soil and waste before selecting proper off-site disposal location (hazardous waste determination)	22 CCR Sections 66261.10, 66261.24, and 66262.11; 23 CCR Sections 2520 and 2521	Applicable for removal actions involving excavation and off-site disposal of materials	For soil or waste removed during reconfiguration (for a cap or cover) or excavation of the landfill, the contents will be analyzed in accordance with these requirements.
Requires generators to properly characterize waste	27 CCR Sections 20200(c) and 20210	Applicable for removal actions involving excavation and off-site disposal of materials	For soil or waste removed during reconfiguration of the landfill or excavation, the material will be analyzed in accordance with these requirements to select the appropriate off-site disposal requirements.

TABLE 2 (Continued)

FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR PARCEL E EMERGENCY REMOVAL ACTION CAPPING PLAN

Requirement	Citation	ARAR Determination	Comments
Establishes requirements for generators of hazardous waste	22 CCR Sections 66262.11, 66262.20, 66262.30, 66262.31, 66262.32, 66262.33, 66262.34	Applicable for removal actions involving off-site disposal of hazardous waste	For debris/surface vegetation determined to be hazardous waste, the material will be handled in accordance with the technical requirements of these regulations.
Sets requirements for testing excavated soil to see if it is restricted for lead disposal	22 CCR Section 66268.7	Applicable for removal actions involving off-site disposal of nonhazardous waste	For debris/surface vegetation determined to be hazardous waste, this will determine if treatment is required before disposal.
Establishes a classification system for solid waste that provides the basis for determining which wastes may be discharged at each class of solid waste management unit	27 CCR Sections 20200 et. Seq.	Applicable for removal actions involving off-site disposal of nonhazardous waste	For debris/surface vegetation determined to be nonhazardous waste, the material will be handled in accordance with the technical requirements of these regulations.
Requirements for precipitation and drainage controls	27 CCR 20365(a)(c)	Relevant and appropriate to landfill capping	Cover must be designed to prevent ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping. Cover must also be able to effectively divert sheet runoff.
Requirements for establishment of survey monuments	27 CCR 20950 (d)	Relevant and appropriate to landfill capping	Surveying monument requirements will be followed for alternatives that leave waste in place.
Establishes requirements for slopes of final cover	27 CCR 21090(a)	Relevant and appropriate to landfill capping	Relevant and appropriate to assure cover integrity and prevent exposure to debris and contaminated soils.
Establishes requirements for a foundation layer	27 CCR 21090 (a)(1)	Relevant and appropriate to landfill capping	Relevant and appropriate to assure cover integrity and prevent exposure to debris and contaminated soils.

TABLE 2 (Continued)

FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR PARCEL E EMERGENCY REMOVAL ACTION CAPPING PLAN

Requirement	Citation	ARAR Determination	Comments
Establishes requirements for an erosion-resistant vegetative layer	27 CCR 21090 (1)(3)(A)1	Relevant and appropriate to landfill capping	Relevant and appropriate to assure cover integrity and prevent exposure to debris and contaminated soils.
Prohibits discharge of liquid wastes (including leachate) to the final cover	27 CCR 21090(a)(5)	Relevant and appropriate to landfill capping	Liquid wastes should not be placed on final cover.
Establishes requirements for preventing ponding, erosion, and run-on	27 CCR 21090(b)(1)(A),(B),(C); 210909(b)(2)	Relevant and appropriate to landfill capping	Relevant and appropriate to assure cover integrity and prevent exposure to debris and contaminated soils.
Establishes requirements for landfill cap design and landfill closure, and that the design is compatible with postclosure land use	27 CCR 21140(a),(b)	Applicable to landfill capping	Final cover will function with minimum maintenance to protect public health by controlling vectors, fire, odor, litter, and gas migration, and be compatible with postclosure land use.
Establishes requirements for the final grade of the landfill cap and final cover	27 CCR 21150(a)	Applicable to landfill capping	Final grades will be designed and maintained to reduce impacts to public health and safety and take into consideration any postclosure land use.
Establishes requirements for slope stability in the design of the landfill cap and final cover	27 CCR 21145 (a)	Applicable to landfill capping	Slope stability will be ensured under both static and dynamic conditions.
Establishes requirements for drainage and erosion control in the design of the landfill cap and final cover	27 CCR 21150 (a),(b)	Applicable to landfill capping	Drainage and erosion control systems will be implemented to ensure integrity of postclosure land use.
Establishes requirements for the postclosure maintenance of the landfill cap and final cover and requirements regarding closure and postclosure maintenance plans	27 CCR 21090©,(1),(3),(4), and (5); and 21769	Relevant and appropriate	Postclosure activities will maintain the cap.

TABLE 2 (Continued)

FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR PARCEL E EMERGENCY REMOVAL ACTION CAPPING PLAN

Requirement	Citation	ARAR Determination	Comments
Establishes requirements for site security after closure	27 CCR 21135(g)	Relevant and appropriate to landfill capping	Once closure activities are complete, measures consistent with these requirements will be taken to protect public health and safety.
Establishes requirements for postclosure land use	27 CCR 21190 (a),(b),(c)	Relevant and appropriate to landfill capping	Postclosure land use will be designed and maintained to protect public health and safety, prevent human contact with waste, and prevent gas accumulation.
Establishes requirements for the postclosure maintenance of the landfill and requirements regarding operations plan	27 CCR 21180 (A); 27 CCR 21760; and 21830(b)	Relevant and appropriate to landfill capping	Postclosure maintenance will be performed to ensure the integrity of the final cover and environmental control systems. Substantive requirements of the design report and operations plan will be addressed in the removal design.
Establishes groundwater monitoring program requirements following closure	27 CCR 20380 et. Seq.	Relevant and appropriate after closure.	Establishes a detection monitoring program.
Establishes the detection monitoring system for the post-removal action groundwater monitoring program	27 CCR 20420	Relevant and appropriate after closure	Detection monitoring shall be conducted with a system appropriate for detecting a release from the unit.
Discusses requirements for establishment of concentration limits for chemicals of concern	27 CCR 20400(a),(d)	Relevant and appropriate after closure	Concentration limits will be developed in the postclosure groundwater monitoring plan.
Establishes requirements for gas monitoring and control during closure	27 CCR 20921 (a); 20923; 20932; 21160	Potentially relevant and appropriate	A gas survey will be implemented to assure methane concentrations do not exceed 5 percent by volume at landfill boundaries. If gas generation is detected at levels that exceed this standard applicable gas monitoring, controls will be implemented.

TABLE 2 (Continued)

FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR PARCEL E EMERGENCY REMOVAL ACTION CAPPING PLAN

Notes:

ARAR	Applicable or relevant and appropriate requirement
BAAQMD	Bay Area Air Quality Management District
CAMU	Corrective action management unit
CCR	*California Code of Regulations*
CFR	*Code of Federal Regulations*
EPA	U.S. Environmental Protection Agency
IR	Installation Restoration
LDR	Land Disposal Restriction
RCRA	Resource Conservation and Recovery Act
U.S.C.	*United States Code*
VOC	Volatile organic compound